DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, KANSAS CITY DISTRICT
635 FEDERAL BUILDING
601 E 12TH STREET
KANSAS CITY MO 64106-2824

March 9, 2015

Mr. Brad Vann, Remedial Project Manager
U.S. Environmental Protection Agency Region 7
11201 Renner Boulevard
Lenexa, KS 66219

Dear Mr. Vann:

Per EPA's request, the U.S. Army Corps of Engineers (USACE) has compiled information regarding additional data required to adequately evaluate the potential effectiveness of the heat extraction barrier alternative proposed in the "Isolation Barrier Alternatives Analysis – West Lake Landfill Superfund Site" report dated October 10, 2014. This information was originally transmitted to you on December 3, 2014.

Purpose:

One of the Alternatives evaluated in the October 2014 Isolation Barrier Alternatives Analysis report submitted by Bridgeton Landfill LLC is a heat extraction barrier. However, the Alternatives Analysis report lacked detailed information necessary for USACE to make an independent technical evaluation of the potential effectiveness of such a system. It is understood that Bridgeton Landfill, LLC is proposing to expand on the current test well and perform a pilot study to obtain information to demonstrate the effectiveness of this proposed alternative and to obtain data necessary for design of the system.

Additional Data Required for Evaluation:

The information identified below is information USACE will need regarding the preliminary heat extraction study at GIW-4 and information on the next phase of the study consisting of retrofitting 6 additional GIW wells with recirculation coolant tubes, to assess whether adequate information is being collected to design an effective heat extraction system.

- Schematic of the modified GIW-4 used in the preliminary heat extraction study including depth and construction of the well and all pipe sizes where fluid is flowing
- Details of the cooling equipment and/or coolant being used in the pilot study.
- The preliminary data collected from the heat extraction study at GIW-4 including inflow and outflow water temperatures, flow rate, and the temperature within the casing measured at multiple depths.

- Calculations to determine the 25kW extraction rate.
- Location of the 6 additional GIW wells to be retrofitted with recirculation coolant tubes including depth and construction of the wells and all pipe sizes where fluid will flow.
- An explanation of how the modified GIW wells are representative of the proposed driven heat extraction wells and whether or not a pilot study of driven wells of the material proposed for the full scale system will be tested prior to design and installation of the system.
- Plans of the proposed closed loop header system used to convey cooling water to the mechanical cooler.
- Location of current Temperature Monitoring Probes and depths and proposed locations and depths of temperature measurements when the pilot study is expanded.
- Proposed study procedures including assumptions used.
- Proposed calculations to determine thermal conductivity and heat storage properties of the landfill waste. In addition, how is obtaining thermal conductivity and heat storage properties of the South/North Bridgeton landfill waste representative of these properties in the proposed location of the heat extraction system in the West Lake Landfill waste?
- Results of the assessment of heat front progress to the north and the rate of energy flux to the north.
- Calculations used to predict the amount of heat that could be extracted under steady state conditions and the results of those calculations.
- A plan view of the proposed Temperature Monitoring Points as well as a cross section showing depth intervals of temperature readings. Attachment C indicates it is envisioned as one array per 120 feet would be sufficient. Is this 120 ft spacing parallel with the proposed barrier?
- It appears the settling front associated with the SSE would render the heat exchange system non-functional if the system fell with the influence of settlement (similar to the need to set back Option 3 IB wall). Therefore, it appears the heat exchange system would need to halt the SSE and settling front some distance south of the barrier to prevent this failure from occurring. What distance is this and what temperature needs to be attained some distance from the barrier to prevent this from happening?

USACE is available to meet with you and/or Bridgeton Landfill, LLC as necessary to discuss the need for the above-requested data.

Respectfully,

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Robyn V. Kiefer
Project Manager

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